(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 284 704**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87830410.4**

(51) Int. Cl.⁴: **E04B 1/343**

(22) Date of filing: **19.11.87**

(30) Priority: **30.03.87 IT 1990387**

(43) Date of publication of application:
05.10.88 Bulletin 88/40

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR LI

(71) Applicant: **MODULCASA S.r.l.**
Via Rapallo, 2/A
I-43100 Parma(IT)

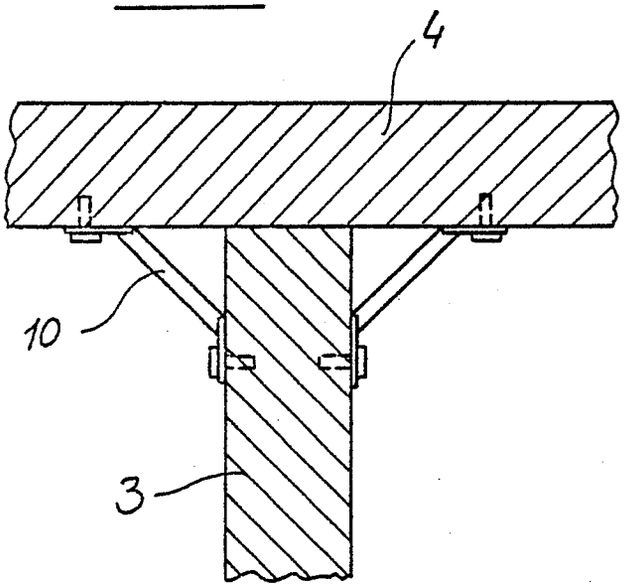
(72) Inventor: **Reggiani, Barbanzio**
MODULCASA S.r.l. Via Rapallo, 2/A
I-43100 Parma(IT)

(74) Representative: **Cicogna, Franco**
Ufficio Internazionale Brevetti Dott.Prof. Franco Cicogna Via Visconti di Modrone, 14/A
I-20122 Milano(IT)

(54) Building structure made of prefabricated elements adapted for an easy assembling.

(57) The present invention relates to a building structure (1) made starting from prefabricated elements adapted to be easily assembled, which comprises a floor (2) defining a supporting frame for supporting a plurality of prefabricated panels (3), adapted to be arranged with a vertical adjoining relationship so as to define the building wall, a covering (4) supported by the top portions of the prefabricated panels, coupling means (13) being provided for removably coupling the panels to one another and to the floor and covering which coupling means (13) comprise a hook member (14) which projects from one side of the panels and may be engaged with a lug member (15) provided on the adjoining panel, on one of the panel being moreover provided a rotatable cam member (16) to be engaged with the hook member (14) for moving away from the lug and locking thereon.

Fig.3



EP 0 284 704 A1

BACKGROUND OF THE INVENTION

The present invention relates to a building structure made staring from prefabricated elements adapted to be easily assembled,which has been specifically designed for making temporary houses,stores,garages,school buildings,bars,erecting yard "boxes" ,beach or bathing huts and civil and industrial constructions in general.

There are presently known buildings made of prefabricated elements which comprise panels adapted to be arranged in an adjoining vertical relationship so as to define the building walls.

More specifically these known panels are vertically arranged on a floor structure,also of the prefabricated type,and,on the top portions of the panels a prefabricated covering structure is mounted.

The known prefabricated element buildings,though they may be assembled in comparatively reduced times,in respect of the conventional type of buildings,require however a comparatively great time and labour amount.

Infact the known prefabricated panels are generally assembled to one another by using screws,bolts or other like coupling means which require a comparatively long assembling time and a very high accuracy by the operator in order to obtain satisfactory results,mainly with respect to the thermal insulation properties.

SUMMARY OF THE INVENTION

Thus,the task of the present invention is to overcome the above mentioned drawbacks,by providing a novel prefabricated building structure,which has been specifically designed to reduce to a minimum its assembling time and labour,while assuring a satisfactory thermal insulation from the outside environment.

Within the above task,a main object of the present invention is to provide such a prefabricated element building which is adapted to meet the related safety standards.

Another object of the present invention is to provide a prefabricated element building structure which can also be disassembled in a very reduced time,in respect of the known building structures.

According to one aspect of the present invention, the above mentioned task and objects,as well as yet other objects,which will become more apparent thereinafter,are achieved by a prefabricated element building structure,adapted to be easily assembled,characterized in that it comprises a floor defining a supporting frame for supporting a plurality of prefabricated panels,provided for being arranged in a vertical adjoining relationship so as to define the walls of the building,a covering supported by the top portions of said panels,means being provided for removably coupling said panels to one another,to said floor and to said covering.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become more apparent thereinafter from the following description of a preferred,though not exclusive embodiment,of a prefabricated element building structure according to the invention,which has been illustrated,by way of an indicative example,in the accompanying drawings,where:

fig.1 is a schematic perspective view of the building structure according to the present invention;

fig.2 is a vertical cross-sectional view illustrating the coupling of a prefabricated panel to a prefabricated covering and prefabricated floor to make the building structure according to the present invention;

fig.3 is a cross-sectional view illustrating the procedure for coupling the covering to a prefabricated panel;

fig.4 is a further cross-sectiqnal view illustrating another possible method for coupling the prefabricated panels,covering and floor to make a building structure according to the invention;

fig.5 is a schematic view illustrating the removable coupling means for coupling two adjoining panels according to the invention;
and

fig.6 illustrates another type of coupling of the panels and covering.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings,the novel building structure according to the invention,which has been indicated overally at the reference number 1,substantially comprises a floor 2 which defines a substantially horizontal supporting surface,a plurality of prefabricated panels 3 provided for being arranged in a vertical adjoining relation ship so as to define the walls of the building structure and a covering 4,which is supported by the top portions of the panels.

The prefabricated panels may be made of

wood,or two metal sheets arranged with a facing spaced relationship so as to define,therebetween,a gap to be filled by a thermally insulating material such as foamed polyurethane or the like materials.These panels,in particular,are subjected to a painting operation on their two sides and provided with a reinforcing frame,at least at their top portions to be engaged with the covering 4.

This reinforcing frame may consist,as shown in figure 2,by a metal section member 5a,of substantially C-shape,provided for forced association with the top portion of a panel.

More specifically,said metal section member may be provided with a portion partially extending inside of the panel 3 and having suitable threaded seats or holes 6 for coupling the covering 4 to the top portions or ends of the panels,by means of bolts 7 or self-threading screws.

As shown in figure 4,the reinforcement frame may consist of a metal section member 5b,also of C-shape, which is provided,on its side supported by the top portions of the panels 3,with a plurality of bores or holes which may be engaged with self-threading screws 8 for coupling the covering 4 and panels 3.

According to a further embodiment of the present invention,which has been schematically shown in figure 6,the reinforcement frame may consist of a metal section member 5c,also of C-shaped cross-section,which is affixed by riveting to the panel 3 and which is engaged with the covering 4 by means of a plurality of self-threading screws 9.

Advantageously,in order to provide a proper stability of the covering 4-panel 3 coupling,there are provided bracket members 10 which are associated,by riveting or self-threading screws,with the covering 4 and panel 3 bodies.

Further advantageously,each panel 3 is provided,at its lower or bottom portion,with a metal plate 11 which is at least partially embedded in the body of the panel and which is provided with a portion to be supported by the floor and rigidly associated therewith,by means of a plurality of self-threading screws 12,or rivets,bolts and the like.

According to the present invention,in order to engage two adjoining panels,there are provided removable coupling means,indicated overally at the reference number 13 which,in the embodiment being disclosed,substantially consist of a hook 14 which laterally projects from a panel and may be engaged with a lug member 15 provided at one side end of the adjoinig panel.

Advantageously,on the hook 14 a cam member 16 operates which may be rotated,upon assembling,to move away the hook 14 from the lug member 15,so as to clamp the two panels and lock the hook 14,in the closure position,on the lug 15.

At the perimeter of the covering 4 there is provided a band 17,made for example of a sheet metal,which is associated with the covering by means of bracket 18.

Under the band 17 a gutter 21 is arranged which,for example,is made of vinyl chloride or the like material and is affixed to suitable attaching regions formed on the outer side of the panel 3 reinforcement frame.

Advantageously,in order to provide proper sealing properties,at the junction zone of two panels there is arranged a sealing material band,made for example of a foamed material,which is compressed as the panels are assembled.

In particular,the floor 1 may also be of the prefabricated type,or consist of a steel tube structure supporting a plurality of horizontally arranged panels,some of which may be already provided with the related doors 19 and windows 20.

The building structure according to the present invention may be assembled by the following method.

After having arranged horizontally the floor 2,the panels 3 are mounted on said floor and are coupled to one another by coupling the hook 14 and lug 15,by rotating the cam member 16.

Then the panels 3 are rigidly engaged with the floor 2 and the covering 4 is arranged thereon,said covering being successively affixed to the panels 3:finally there are mounted finishing elements,such as the gutter 21.

From the above disclosure it should be apparent that the invention fully achieves the intended task and objects.

More specifically,it should be apparent that the provision of the removable coupling means affords the possibility of assembling,in a quick and simple way,the prefabricated panels to make the walls of building structures,which structures are quickly and easily completed by applying the covering,through the use of self-threading screws or the like means.

Moreover the building structures may also be disassembled in a correspondingly quick and easy way.

Another advantage of the present invention is that it affords the possibility of quickly and easily making building structures having a good aesthetic finishing.

The invention as disclosed is susceptible to several modifications and variations all of which fall within the scope of the invention.

Moreover all of the details may be replaced by other technically equivalent elements.

In practicing the invention,the used materials,provided that they are compatible to the inteded use,as well the specific size and shapes may be any according to requirements.

Claims

1-A prefabricated element building structure,adapted for being assembled in a quick and easy way,characterized in that it comprises:a floor defining a supporting surface for a plurality of prefabricated panels,to be arranged in a vertical adjoining relationship so as to define the walls of the building structure,a covering to be supported on the top portions of said panels,there being provided means for removably coupling said panels to said floor and covering.

2-A prefabricated element building structure,according to claim 1,characterized in that said removable coupling means consist of a hook,which projects from one side of one of said panels and is provided for engagement with a lug member formed on the adjoining panel,on one of said panels there being provided a cam member,of the rotating type,for engaging said hook and moving it away from said lug member and locking it thereon.

3-A prefabricated element building structure,according to claim 1,characterized in that each said panel is provided,at least at the top thereof,with a reinforcing frame,which is rigidly associated with the body of the panel and adapted for association,by means of self-threading screws,with said covering.

4-A prefabricated element building structure,according to one or more of the preceding claims,characterized in that it comprises bracket members adapted for rigidly engaging said covering and each said panels.

5-A prefabricated element building structure,according to one or more of the preceding claims,characterized in that said panels are provided,at their bottom portions,with plate members embedded in said panel bodies and adapted for being rigidly associated with said floor.

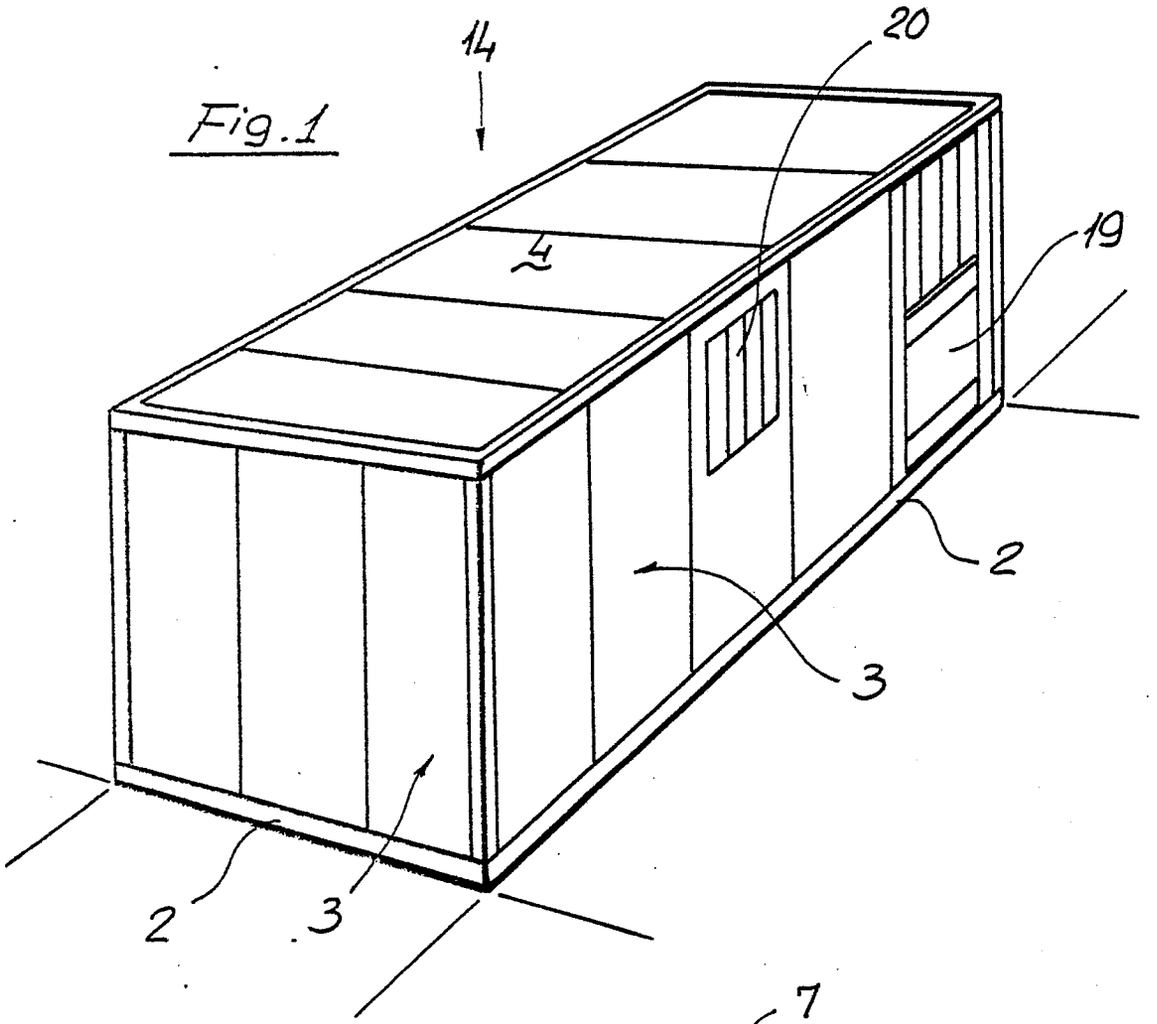
6-A prefabricated element building structure,according to one or more of the preceding claims,characterized in that said reinforcement frame is provided,on its outer side,with attachment regions to be engaged with a gutter arranged at the bottom of said covering.

7-A prefabricated element structure,according to one or more of the preceding claims,characterized in that said covering is provided with a perimetrical band which is arranged at said gutter.

8-A prefabricated element building structure,according to one or more of the preceding claims,characterized in that a sealing material is interposed between two adjoining panels.

9-A prefabricated building structure made of prefabricated elements adapted for an easy and quick assembling,according to the preceding claims,and substantially as broadly disclosed and illustrated for the intended task and objects.

Fig.1



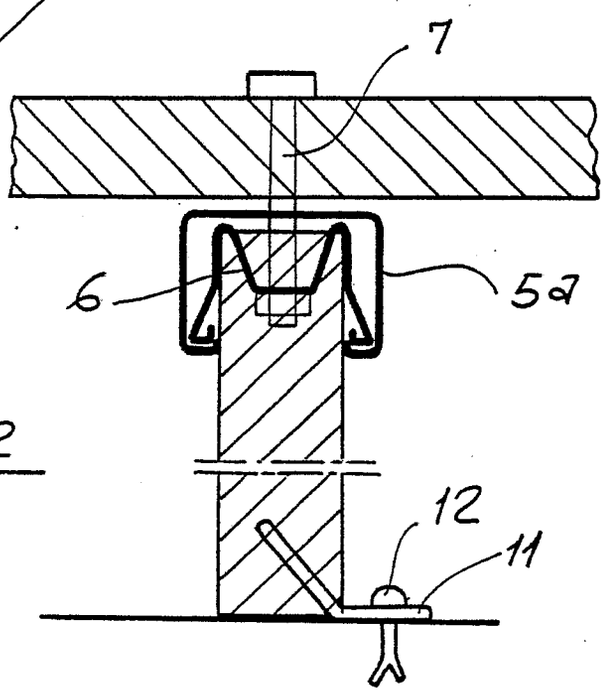


Fig.2

Fig.3

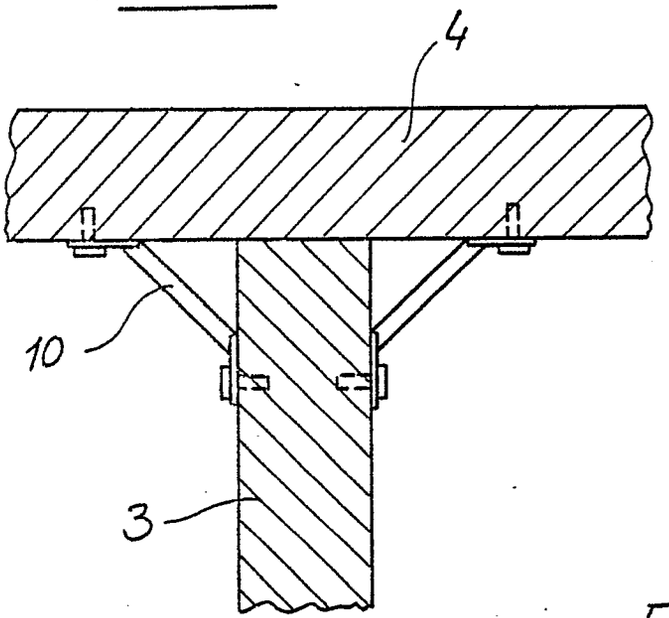
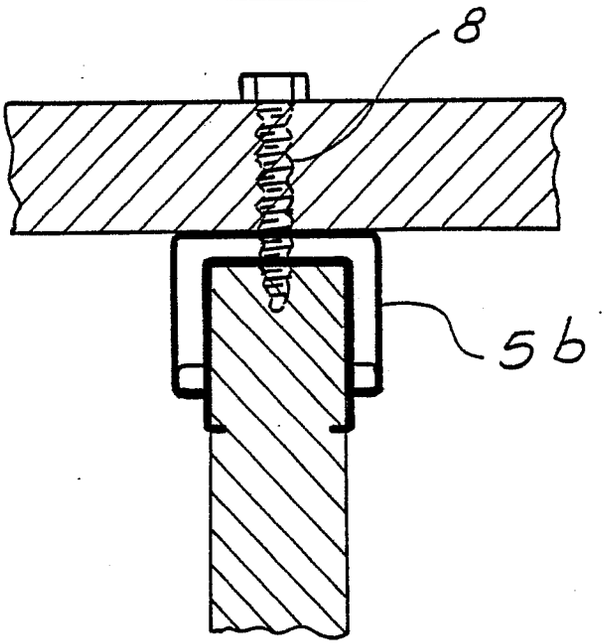


Fig.4



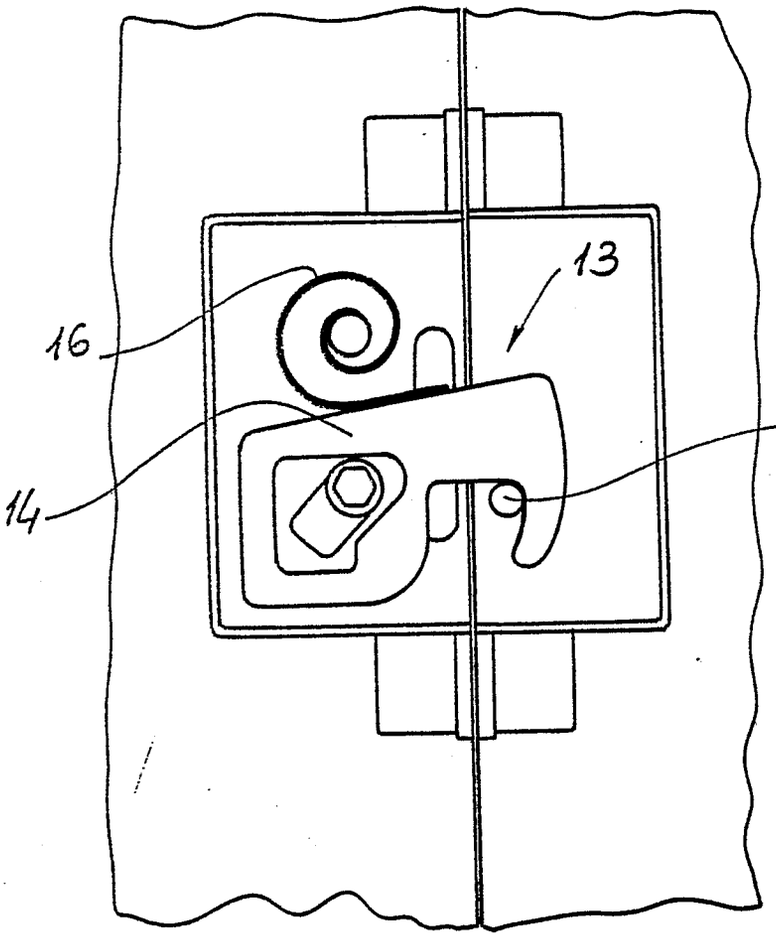


Fig.5

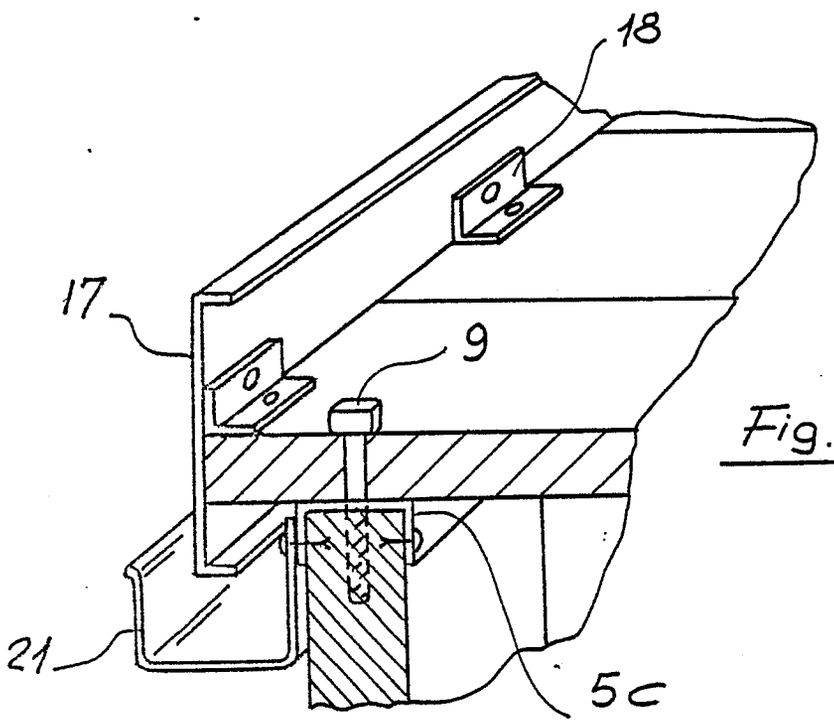


Fig.6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 87 83 0410

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-2 647 287 (JONES) * Column 1, lines 1-5; column 2, lines 12-39; claim 1; figures 1-8 *	1,2,8	E 04 B 1/343
Y		3-5,7	
Y	FR-A-2 246 706 (COSTAMAGNA) * Page 4, lines 15-38; figures 4,5 *	3	
Y	US-A-2 803 856 (KOFAHL et al.) * Column 5, lines 39-57; figure 10 *	4	
Y	AU-B- 506 666 (ABSOLON.E.) * Page 5, lines 16-25; figures 4,6 *	5	
Y	US-A-3 432 976 (BERG) * Column 3, line 53 - column 4, line 6; figure 1 *	7	
A	US-A-3 309 115 (A.C. LANGER) * Column 2, line 49 - column 3, line 58; figures 1-6,22-30 *	2	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2 243 307 (LEONE) * Page 1, lines 1-15; figure 1 *	6	E 04 B E 04 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04-07-1988	PORWOLL H.P.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)